REMARKS/ARGUMENTS

Reconsideration of this application in light of the rejection set forth in the Office Action having a mailing date of May 19, 2005 is requested. Claims 1-18 are pending in the application.

At the outset of this response to rejections based upon prior art, please note that the claimed polymers are used as barrier coatings for cellulosic substrates, e.g., paper and paper board (Claim 14). The polymers when applied to such cellulosic substrates afford barrier resistance to oils and greases, including hot oils and greases which may be present in cooked food products. Also, properties of the polymers are noted in the Summary of the Invention, page 3, paragraph [0011], where it is reported they are non-blocking; i.e., paper coated with these polymers do not adhere when in contact therewith (page 3, lines 22-23, and page 23, paragraphs [0063] and [0064]). To achieve those properties, the polymers must have the tensile storage modulus and thermal properties as defined in Claims 1 and 14.

Rejection under 35 USC 102(b) over Daniels et al., US 5,872,181 (US '181)

At page 2 of the Office Action, Claims 1-4, 6-11, and 13, were rejected under 35 U.S.C. §102(b) as being anticipated by Daniels, et al. The Examiner noted that Figure 1 clearly teach materials having a tensile storage modulus within Applicants' claimed range and Example 6 showed the synthesis of a vinyl acetate/ethylene polymer incorporating acrylic acid. Polyvinyl alcohol was used as the protective colloid. In addition, the Examiner noted the commercial Airflex® polymers exhibited the claimed storage modulus.

With regard to the claimed parameter, "crystalline melting point," the Examiner suggested the polymers of the prior art had heats of fusion and melting points within the claimed range because of the broad melting point range specified. Thus, it was deemed the specified property of Claims 1-4, 6-11, and 13, was inherent in the disclosed polymers.

Response to the Rejection over US '181 under 35 U.S.C. §102(b)

Reconsideration of the rejection of Claims 1-4, 6-11, and 13, under 35 U.S.C. §102(b), as being anticipated by US '181 is requested. Although it is apparent from the evidence in Applicants' specification (refer to the table) that the properties of the claimed polymers are different from those in the prior art cited by the Examiner, the claim language should put one on notice in an analysis under 35 U.S.C. §102(b) that Applicants' claimed

parameters set forth in Claims 1-4, 6-11, and 13, are relevant for differentiating their polymers from prior art polymers, i.e., polymers of US '181. It is submitted that if the properties of the respective polymers are different, the combination of Applicants' claimed properties cannot be inherent in the prior art polymers.

US '181 discloses water borne adhesives based upon vinyl acetate/ethylene polymers that are designed for adhering hard to adhere surfaces, e.g. laminating polyester and polyethylene films. When such films are coated with the polymer, the films stick to each other on application of modest pressure, as for example a cloth or paper substrate (refer to the example). In terms of Applicants' specification, cellulosic substrates coated with these polymers would block, and rolled paper stock coated with the polymers of US '181 could not be unwound. This is in contrast to cellular substrates coated with polymer compositions of the claimed invention which are essentially non-blocking (refer to the table in Applicants' specification). A significant factual difference between the polymers of US '181 and the polymers described in the rejected claims is that the polymers of US '181 do not have ethylene crystallinity and thus a crystalline melting point. In addition, the US '181 polymers generally do not meet the limitation of tensile storage modulus, as the tensile storage modulus is much lower at the elevated temperature of 115 °C and particularly lower than the value set forth in Claim 7. Other non-pressure sensitive vinyl acetate/ethylene polymer adhesives disclosed US '181 may meet this limitation, but they too do not have a crystalline melting point because there is no ethylene crystallinity in the polymers of US '181 and they too do not have a specific crystalline heat of fusion as noted in Claims 9 and 13.

Summarizing, the claimed polymers for providing barrier properties to celluolosic products have ethylene crystallinity, a thermal melting point, and a heat of fusion. The polymer cited in US '181 are laminating adhesives and do not have these properties. Thus, the position of the Examiner that the polymers inherently have the claimed heat of fusion and melting points as set forth at page 3 of the Office Action has been rebutted by this showing and by the comments at page 23, paragraph [0064], of the specification. Therefore, the rejection of Claims 1-4, 6-11, and 13, under 35 U.S.C. §102(b), based on US '181, should be withdrawn.

Rejection under 35 USC 103(a) over Daniels et al., US 5,872,181 (US '181)

In paragraphs 4-9 at page 4 of the Office Action, Claims 1-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over US '181. In this part of the rejection, the Examiner focused on the use of N-methylol acrylamide, the level of vinyl acetate and ethylene in the polymer, and that it had been conventional to apply vinyl acetate/ethylene polymers to paper. This was illustrated in the comparative examples with conventional vinyl acetate/ethylene polymers.

Response to the Rejection under 35 U.S.C. §103(a)

Applicants admit that vinyl acetate/ethylene polymers described in US '181 are similar in polymerized monomer composition to that claimed here, including the incorporation of N-methylol acrylamide and acrylic acid. The differences between the US '181 polymers and those described and claimed here for use in providing barrier properties to cellular substrates resides in the distribution of vinyl acetate and ethylene and the form of, and structure of, the ethylene within the polymer. The claimed polymers here have ethylene crystallinity which imparts hydrophobicity and grease resistance when applied as a film or coating to a cellulosic substrate. This aspect is not taught in US '181 nor is there any teaching that suggests to one skilled in the art to modify the process variables for producing a laminating adhesive based upon a vinyl acetate/ethylene based polymer where the ethylene is in amorphous form to that of producing Applicants' polymer having crystalline ethylene segments. Accordingly, a rejection of Claims 1-18 under 35 U.S.C. §103(a) is not warranted based upon US '181.

Rejection under 35 USC 103(a) over Daniels et al., US 6,316,978 (US '978)

Claims 1-18 were rejected under 35 USC 103(a) as being unpatentable over Daniels et al. (US '978). In paragraphs 10-12, of the office action, Claims 1-18 were rejected over US '978, on the basis that it would have been obvious to coat paper with these polymers. It was maintained that the polymers having the claimed storage modulus were known and it is was conventional to apply polymers to cellulosic substrates.

Response to the Rejection Under 35 U.S.C. §103(a)

An inadvertent error was made in the patent number listed in paragraphs 10, 11 and 13, of the office action. The correct number of the patent is 6,319,978 as noted in list of references cited.

Please note that the polymers of US '978 are pressure sensitive, i.e., tacky to the touch. Cellulosic substrates coated with these polymers would most assuredly stick to each other, a property not present in Applicants' claimed polymer for cellulose application. It should be noted that even though the polymerized monomer components of the polymer may be similar to those in US '978, it is because of their distribution and their structure in the polymer that accounts for the significant property differences. It is submitted, there is no teaching in US '978 that would lead to the polymers claimed in this application.

Rejection under 35 USC 103(a) over Daniels et al., US '181 or US '978, in view of Worral, US 3,355,322

Worrall was cited as teaching the application of vinyl acetate/ethylene adhesives for paper application. Worral discloses vinyl acetate/ethylene adhesives which result in bonding under pressure. The polymers of Worral, as with the polymers of Daniels et al., do not have ethylene crystallinity and therefore no thermal melting point nor do they have a heat of fusion as set forth in many dependant claims. Combining the references as indicated in the rejection would not result in the polymers of the claimed invention. Accordingly, a rejection of Claims 1-18 under 35 U.S.C. §103(a) based upon a combination of these references is not warranted.

Request for Information Under 37 CFR 1.105.

In paragraph 18, the Examiner noted that Airflex materials have been marketed prior to the filing of the application and requested information as to whether they had been marked to the public with the suggestion that they be used on paper, cardboard, etc.

In response, Airflex® polymer emulsions represents a broad class of vinyl acetate-ethylene polymer emulsions which have been widely marketed for a variety of applications including the bonding of paper. For example, some Airflex polymers have been used as laminating adhesives for bonding paperboard, some for bonding wax paper such as employed in cereal boxes, and some for coating wood products. However, Airflex polymers marketed heretofore do not have the ethylene crystallinity present in the polymers claimed herein. It is the crystallinity which results in a thermal melting point for the ethylene polymer that is a major reason for the difference in polymer properties from earlier Airflex polymers.

Closing

In closing, the Applicants request that all rejections be withdrawn as none of the prior art polymers have properties identical to, or sufficiently similar, to the properties of Applicants' polymers employed for cellulosic substrates as set forth in Claims 1 and 14 herein. Although many polymers of the prior art have one or more of the claimed components and may display properties, e.g., modulus, within Applicants' claimed range, they do not have the combination of properties including ethylene crystallinity leading to a thermal melting point and heat of fusion (inherent in Claims 1 and 14) and specified in Claims 9, 13 and 16. There is no inherency of properties in the prior art polymers as suggested by the Examiner.

In view of the arguments made herein, it is believed that the application is in condition for allowance and should be passed to issue.

Respectfully submitted,

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